

CLEAN VERSION OF AMENDED CLAIMS

1. An internal high-pressure deformation method comprising
furnishing a first work piece part with a first flange having a first sealing
face;
furnishing a second work piece part with a second flange having a second
sealing face, wherein the first sealing face is matching the second sealing
face to deliver a sealing connection between the first flange and the second
flange;
C1 disposing the first workpiece part and the second workpiece part such that
the first sealing face is disposed opposite to the second sealing face;
surrounding the first workpiece and the second workpiece by first tool
region, a second tool region and a third tool region subdivided into a first
segment and a second segment forming a mold;
pressing the first sealing face against the second sealing face such that the
connection between the first flange and the second flange is sealing relative
to a fluid pressurizing agent;
feeding pressurizing agent into a volume delimited by the first workpiece
and by the second workpiece;

C1 deforming the first workpiece and the second workpiece jointly by internal high-pressure deformation against the first tool region, the second tool region and the third tool region and effected by the pressurizing agent; moving the first tool region away from the deformed first workpiece and the deformed second workpiece; moving the first segment away from the deformed first workpiece, the deformed second workpiece and the second segment in a direction different from the direction of pressing of the first sealing face against the second sealing face to allow removal of the deformed first workpiece and of the deformed second workpiece from the mold for production of a bulging out and undercut hollow body.

7. An apparatus for production of bulged out and undercut hollow bodies comprising

a first tool region;

a second tool region;

C2 a third tool region, wherein the first tool region, the second tool region and the third tool region correspond to the workpiece form to be generated and to a first workpiece part and to a second workpiece part, wherein the tool regions are disposed in different planes, and wherein the third tool region is

subdivided into a first segment and a second segment facing each other perpendicular to the pressing direction according to the shape of a corresponding one of the workpiece parts;

first means for flange pressing disposed at the first tool region;

second means for flange pressing disposed at the second tool region and pressing in a direction opposite to the direction of pressing of the first means of the pressing, wherein the first means for flange pressing and the second

C2 means for flange pressing are adapted to press a first flange of the first workpiece part and a second flange of the second workpiece part sealingly together, and wherein the first segment and the second segment are facing each other in a direction perpendicular to the direction of pressing of the first means for flange pressing;

means for moving the first tool region in reverse pressing direction and the first segment in another second direction and the second segment in another third direction away from a hollow body formed of the first workpiece part and of the second workpiece part for a removal of the hollow body from the mold.

C3 15. An apparatus for production of undercut hollow bodies, wherein the apparatus is subdivided into an upper tool region (e1), a middle tool region

C3
(E2), and a lower tool region (E3) corresponding to a workpiece form to be generated and the number of workpiece parts (1, 2), wherein the upper tool is disposed in an upper plane, wherein the middle tool region is disposed in a middle plane, and wherein the lower tool region is disposed in a lower plane, wherein the middle tool region is subdivided in two segments (S1, S3) according to the shape of the workpiece, and wherein the segments (S1, S3) are movable away from the hollow body (W) for removal of the hollow body (W) from the mold.

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18. An apparatus for production of bulged out and undercut hollow bodies comprising

a first tool region;

a second tool region;

C4
a third tool region, wherein the third tool region is subdivided into a first segment and a second segment,

wherein the first tool region corresponds to a first workpiece part,

and wherein the second tool region and the first segment and the second segment correspond to a second workpiece part, wherein the tool regions are disposed on to of each other;

means for moving the first tool region in a direction away from the location of the second tool region;

means for moving the first segment from the second workpiece part in a direction disposed at an angle relative to a pressing direction performed by the first tool region and by the second tool region;

means for moving the second segment from the second workpiece part in a direction different from a pressing direction of the first tool region or of the second tool region and away from the first segment.

19. The apparatus for production of bulged out and undercut hollow bodies according to claim 18, further comprising
means for moving the second tool region in a direction away from the location of the first tool region.

20. A die for production of bulged out and undercut hollow bodies comprising

an upper tool region having a molding surface at its bottom side;

a middle tool region comprising a right segment having a molding surface on a left hand side and a left segment having a molding surface on a right hand side; a lower tool region having a molding surface at its top side,

c4 wherein the molding surface at the bottom side, the molding surface at the right hand side, the molding surface at the left hand side and the molding surface at the top side correspond to a workpiece form to be generated and wherein the right segment can be removed toward the right side and wherein the left segment can be removed toward the left hand side for allowing removal of a hollow workpiece.
